

C L A I M S

1. Test stand for motor vehicles with a roller assembly (1) comprising a contact surface (3) for rolling the wheels (2), with the contact surface (3) being rotatably driven and preferably adapted to be blocked, and/or braked, and/or released, **characterized in** that the roller assembly (1) is mounted for at least a slight movement with at least two degrees of freedom, and that to determine the force generated by the motor vehicle during driving and/or braking movements of the motor vehicle, it is possible to measure the force that is operative between the roller assembly (1) and a predeterminable fixed point (10), and/or the displacement occurring during the driving and braking movements of the motor vehicle, and/or the angle of rotation between the roller assembly (1) and a predeterminable fixed point (10).

2. Test stand of claim 1, characterized in that a degree of freedom corresponds to a movement transverse or vertical of the travel direction (6) in a horizontal direction, in particular along an X-axis.

3. Test stand of claim 1 or 2, characterized in that a degree of freedom corresponds to a movement along the travel direction (6), in particular along a Y-axis.

4. Test stand of one of claims 1-3, characterized in that a degree of freedom corresponds to a movement transverse or vertical of the travel direction (6) in a vertical direction, in particular along a Z-axis.

5. Test stand of one of claims 1-4, characterized in that a degree of freedom corresponds to a rotation about a preferably vertical axis, in particular a Z-axis.

5 6. Test stand of one of claims 1-5, characterized in that the entire test stand is rotatable about a preferably vertical axis, in particular a Z-axis.

10 7. Test stand of one of claims 1-6, characterized in that the roller assembly (1) is mounted in a lifting platform.

15 8. Test stand of one of claims 1-6, characterized in that the roller assembly (1) is mounted in a vehicle.

 9. Test stand of one of claims 1-8, characterized in that the roller assembly (1) is mounted in a vibrating or oscillating device.

20 10. Test stand of one of claims 1-9, characterized in that the roller assembly is mounted in a turning device.

25 11. Test stand of one of claims 1-10, characterized in that the roller assembly (1) is mounted in a frame (9) that can be secured on or in the floor or to a wall.

30 12. Test stand of one of claims 1-11, characterized in that the roller assembly (1) is jointed to a wall, preferably by means of the frame (9).

 13. Test stand of claim 12, characterized in that the joint connection occurs by means of a coupling element, preferably by means of a metal component.

14. Test stand of claim 13, characterized in that the coupling element is made integral with the frame (9).

5 15. Test stand of one of claims 11-14, characterized in that the coupling element and/or the frame (9) include at least one weak point in at least one predeterminable location, so that flections and/or torsions are detectable preferably by means of at least
10 one sensor (8) associated to the coupling element.

15 16. Test stand of claim 15, characterized in that the weak point or points is or are formed by recesses and/or milled slots.

17. Test stand of claim 15 or 16, characterized in that the weak point or points accommodates or accommodate at least one force transducer (8) and/or at least one sensor (8) for flections and/or torsions.

20 18. Test stand of one of claims 1-17, characterized in that a separate roller assembly (1) is provided for each wheel (2) of an axle.

25 19. Test stand of claim 18, characterized in that each of the two roller assemblies (1) is associated to a separate frame (9).

30 20. Test stand of claim 18, characterized in that both roller assemblies (1) are associated to a common frame (9).

21. Test stand of one of claims 1-20, characterized in that the roller assembly (1) comprises at least two

rollers or cylinders (12, 15), and that a moving belt (14) in the form of an endless belt forming the contact surface (3) extends over the rollers or cylinders (12, 15).

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22. Test stand of one of claims 1-21, characterized in that the roller assembly (1) comprises three or more rollers or cylinders (12, 15).

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23. Test stand of claim 21 or 22, characterized in that the rollers or cylinders (12, 15) are laterally mounted in the frame (9) and rotate with a clearance above the ground.

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24. Test stand of one of claims 21-23, characterized in that the rollers or cylinders (12, 15) are laterally guided in antifriction bearings.

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25. Test stand of one of claims 21-23, characterized in that the rollers or cylinders (12, 15) are laterally guided in slideways.

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26. Test stand of one of claims 1-25, characterized in that a sliding device (16), preferably a slide plate, or an arrangement of rollers or cylinders (16a) can be associated to the roller assembly (1).

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27. Test stand of one of claims 1-26, characterized in that the contact surface (3) comprises a means for absorbing lateral forces, preferably a belt (14a) or a flexible rib for absorbing lateral forces.

28. Test stand of one of claims 1-27, characterized in that a roller or cylinder (12, 15), and/or a sliding

device (16), or an arrangement of rollers or cylinders (16a) include or includes a guide means, preferably a groove (17, 18) for absorbing lateral forces.

5 29. Test stand of one of claims 1-28, characterized in that the roller assembly (1) is guided in the sense of an XY- or XYZ-carriage.

10 30. Test stand of one of claims 1-29, characterized in that the roller assembly (1) is an independent functional module.

15 31. Test stand of one of claims 1-30, characterized in that a drive module is an independent functional module, and preferably adapted to be placed on the roller assembly (1) in different ways, or adapted to be coupled with the roller assembly (1).

20 32. Test stand of one of claims 21-31, characterized in that when viewed in the running direction, in front of the first roller or cylinder (12, 15), i.e., behind the wheel (2) being located on the roller assembly (1), a freely rotatable support roller (25) is arranged, which props the wheel (2) when being
25 braked.

30 33. Test stand of one of claims 21-32, characterized in that when viewed in the running direction, behind the last roller or cylinder, i.e., in front of the wheel (2) being located on the roller assembly (1), a freely rotatable support roller is arranged, which props the wheel (2) when being accelerated.

34. Test stand of claim 32 or 33, characterized in that the support roller (25) is held in its propping position elastically or by the force of a spring by means of lateral support arms (26).

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35. Test stand of claim 34, characterized in that the support roller (25) is held in its propping position by means of the lateral support arms (26) such that it can be lowered by the tire (2) in the travel direction, while overcoming an elastic force or the force of a spring, and that it can be automatically raised to its propping position after driving over it.

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36. Test stand of one of claims 32-35, characterized in that the support roller (25) is adapted for driving over it in a lowered state, and that it can be raised to its propping position and preferably be locked therein, after driving over it, preferably when a wheel (2) is positioned on the roller assembly (1).

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37. Test stand of one of claims 32-36, characterized in that the support roller (25) can be moved to its propping position, when a wheel (2) is positioned on the roller assembly (1).

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38. Test stand of one of claims 32-37, characterized in that the support roller (25) can be moved from its lowered position to its propping position by means of a mechanism, preferably via a worm gearing.

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39. Test stand of one of claims 21-38, characterized in that the force pickup and the measurement of the displacement and/or angle of rotation

occur between the rollers or cylinders (12, 15) and the frame (9).

40. Test stand of one of claims 21-39,
5 characterized in that the force pickup and/or the measurement of the displacement and/or angle of rotation occur within the rollers or cylinders (12, 15).

41. Test stand of one of claims 21-40,
10 characterized in that the force pickup and/or the measurement of the displacement and/or angle of rotation occur in or on the bearings of the rollers or cylinders (12, 15).

15 42. Test stand of one of claims 21-41, characterized in that at least one roller or cylinder (12) is constructed as a frictionally engaged drive roll or drive cylinder.

20 43. Test stand of one of claims 21-42, characterized in that at least one roller or cylinder (15) is constructed as a nonfrictionally engaged deflection roll or deflection cylinder.

25 44. Test stand of one of claims 21-43, characterized in that for the drive of at least one of the rollers or cylinders (12) a motor (21), preferably an electric motor is provided.

30 45. Test stand of claim 44, characterized in that the motor (21) is arranged in the region between the rollers or cylinders (12, 15).

46. Test stand of claim 44, characterized in that the motor (21) is arranged in the region below the rollers or cylinders (12, 15).

5 47. Test stand of claim 44, characterized in that the motor (21) is arranged in one of the driven rollers or cylinders (12, 15) or in the driven rollers or cylinders (12).

10 48. Test stand of claim 44 or 47, characterized in that the motor (21) is an integral part of the roller or cylinder (12, 15).

15 49. Test stand of one of claims 1-48, characterized in that a heating device for the contact surface (3) is associated to the roller assembly (1).

20 50. Test stand of one of claims 1-49, characterized in that the roller assembly (1) comprises a tensioning device (13) for stretching the contact surface (3).

25 51. Test stand of claim 50, characterized in that the tensioning device (13) comprises at least one spring that is operative between two rollers or cylinders (12, 15).

30 52. Test stand of one of claims 1-51, characterized in that the top of the contact surface (3) includes a granular structure of a predeterminable grain size.

53. Test stand of one of claims 1-51, characterized in that the top of the contact surface (3) comprises a rubber covering of a predeterminable thickness.

54. Test stand of one of claims 1-53, characterized in that the top of the contact surface (3) includes a preferably imprinted picture or text information.

5 55. Test stand of one of claims 1-54, characterized in that the contact surface (3) is constructed as a moving belt, preferably as a fabric belt.

10 56. Test stand of one of claims 1-55, characterized in that a receiver for sound waves, preferably a microphone is associated to the roller assembly (1).

15 57. Test stand of one of claims 1-56, characterized in that the roller assembly (1) comprises a plurality of contact surfaces (3) preferably in a cascaded arrangement.

58. Test stand of one of claims 1-57, characterized in that the test stand can be used as a road simulator.

20 59. Test stand of one of claims 1-58, characterized in that the roller assembly (1) comprises a device for adjusting a negative track.